Conceptual

You can use the Arduino microcontroller to read analog input that can be used to control an analog output.

- ☐ Read tutorial on reading analog signals.
- ☐ Determine how to make a voltage divider using a variable resistor and your Arduinio.
- ☐ Determine the smallest voltage that can be measured for a 5V signal that is read using 8-bit resolution. Compare to 10-bit resolution.

Basic Make

- ☐ Design a circuit that reads an analog input and outputs an analog signal based on the input.
- ☐ Make your circuit
- ☐ Make a program to vary the load voltage from the signal measured by the analog input.
  - o A useful function is "*map*()"

Advanced/Extended Make

- ☐ Control multiple loads.
- ☐ Measure various inputs
- ☐ Explore power options:
  - o USB
  - o External power pack
- ☐ Duplicate diagrams using Fritzing

Equipment

- ☐ Computer with access to Fritzing and Arduino
- ☐ Circuit components: Arduino and misc electronic parts

Objective

Physics Concepts
- ☐ Voltage divider
- ☐ Analog to Digital
  - o Resolution and bits
- ☐ Digital to Analog
  - o Resolution and bits

Experimental analysis
- ☐ Circuit design – voltage divider

Technology Concepts
- ☐ Schematic Symbols
- ☐ Programming Syntax – analog read